Description

Gas cooker burner of improved type

The present patent application for industrial invention refers to a model of gas cooker burner of improved type, which has been designed to modify the direction of the flames on the bottom of the pot, in the attempt to improve the thermal efficiency of the cooker.

To better understand and appreciate the advantages of the invention, reference is made to the structural geometrical configuration of current burners, of which the model of the invention is an evolution capable of optimising the direction of the flames on the bottom of the pot.

Gas cooker burners basically comprise a lower hollow body, on which a disk with a large annular crown is centred and positioned. The crown features a dense series of radial notches and is covered by a circular plate, known as "cap".

The body is configured as a chamber and features a central hole on the bottom wall for the injector nozzle. The gas comes out of the hole with vertical direction after going through a short horizontal conduit located on the lower section of the body, where the gas feed pipe is inserted.

The disk with annular crown has a large central hole provided with a collar that surrounds the injector nozzle.

The disk with annular crown is also provided with peripheral feet used to centre and place the disk in raised position on the border of the chamber.

This means that an annular slot exists between the annular crown and the body of the burner. External air can flow inside the chamber through the annular slot, because of the depression created by Venturi effect by the gas that rises through the collar and spreads inside the cap, until it exits through the annular crown with radial direction. The notches of the annular crown become output nozzles when they are bordered by the cap.

As it is known, when the gas cooker is turned on, a small combustion flame is created in each nozzle from which the air-gas mixture flows.

Today the flame is stabilised by having the cap protruding by a few millimetres (normally two to four millimetres) from the notched crown.

The first section of each flame is therefore dominated by the protruding border of the cap, which prevents the flame from rising and imposes a centrifugal horizontal trajectory on the flame, which gradually tends to assume an ascending direction after passing beyond the border of the cap.

In other words, it can be said that in the current models of burners the flames coming out of the notched crown lick the bottom of the pot with centrifugal direction and very small impact angle, thus considerably impairing the thermal efficiency of the burner, since the maximum efficiency value is measured when the flame reaches the bottom of the pot with perpendicular direction.

The purpose of the present invention is to solve this drawback, by providing a solution that can favour the immediate rising of the flames from the notched crown and guarantee the stability of the flames.

The model of burner of the invention uses a cap having the same external diameter of the crown, which is provided with an external annular groove along the edge of the upper border.

In other words, it can be said that the border of the cap is flush with the sections of each nozzle of the burner, which, for the first time, communicate by means of the annular groove, where the speed of the air-gas mixture is lower than the speed measured in the deeper notches of the crown, resulting in the stabilisation of the flame coming out of the notches.

For major clarity the description of the invention continues with reference to the enclosed drawings, which are intended for purpose of illustration only and not in a limiting sense, whereby:

- Fig. 1 is a side view of the model of burner of the invention, partially sectioned with a vertical diametral plane that passes through the axis of the conduit that supplies gas to the injector.
- Fig. 2 is a cross-section with a diametral plane of the cap and the notched crown used by the burner of the invention;
- Fig. 3 is an enlarged view of a detail of Fig. 2 with the addition of a flame.

With reference to the aforementioned figures, the model of burner (1) of the

invention comprises a hollow body (2) with an internal chamber (3), whose bottom wall features a central hole for the injector nozzle (4), where gas arrives from the conduit (5) externally located on the body (2) and provided with threaded opening (5a) used to insert the gas feed pipe.

The burner (1) is also provided with a disk (6) with a large annular crown (6a) with a dense series of deep radial notches (6b) covered by a circular cap (7).

The disk (6) is also provided with peripheral feet (6c) used to centre and place the disk (6) in raised position on the border of the chamber (3); for this reason an annular slot (8) exists between the annular crown (6a) and the body (2) of the burner, through which external air can flow inside the chamber (3).

The crown (6a) is traditionally provided with shallower radial notches (6d) alternated with the notches (6b).

The peculiarity of the burner (1) is represented by the cap (7) with a lower border (7a) situated near the crown (6a) immediately above the section from which the mixture comes out and goes through the notches (6b and 6d) of the crown, which is provided with an external annular groove (9) along the edge of the upper border and is fed by the air-gas mixture that goes through the shallower notches (6d).

Finally, attention is drawn on the fact that the border (7a) is situated immediately before the groove (9) and transmits the flame to the deeper notches (6b) of the crown.

Measurements have shown that the speed of the air-gas mixture in the groove (9) is lower than the speed in the deeper notches (6b) of the crown (6a), resulting in the stabilisation of the flame (F) coming out of the notches (6b).

As shown in Fig. 3, after coming out from the crown (6a), the flame (F) has a considerably ascending direction, so that the impact angle with the bottom of the pot is by far closer to the optimal value. As a matter of fact, in the burner of the invention the thermal efficiency is increased by 1.5% -2% compared to burners of known type.